PRELIMINARY

Technical Information Manual

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MOD. VME801X

VME64 LC 21 SLOT
6U CRATE

NPO:
00123/05:8010x.MUTx/02

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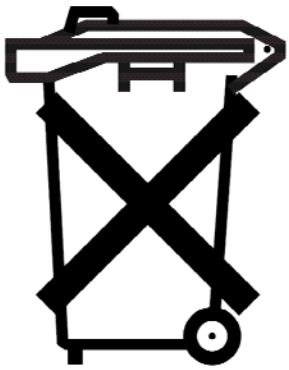

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1. General description

1.1 Overview

The Model VME8010 is a 21-slot 6U VME crate, with VME64 compliant backplane. A 1U space is reserved for fan tray.

The Unit is powered by 100÷230 VAC, 50 ÷ 60 Hz, power factor 0.95 (230VAC). Power supply must be disconnected any time the unit is serviced. A pluggable power supply verison (Mod. VME8011) is also available.
The main Fuse is F10A, fast type.

Fig. 1.1: The Mod. VME8010 21-slot 6U VME crate

2. Technical specifications

2.1 Technical specification table

Table 2.1: Mod. VME8010 Technical Features

Mechanics:	7U bin for 6U x 160 mm VME cards, 21 slots, 1U space for fan tray
Mains input:	auto range: 94÷264 VAC, 47÷63 Hz, 400 Hz on request, inrush current: limited by cold-start-circuit, max. 20 A input current: CE acc. to EN 61000-3-2, IEC 555 power. fact. 0.95 (230 VAC)
Main Fuse:	F10 A, fast type
Output power:	60 A @ +5 V, 6 A @ -12 V, 8.9 A @ +12 V
Isolation:	CE acc. to EN 60950, ISO 380, VDE 0805, UL 1950, C22.2.950
Regulation:	static: 0%÷100% load, +/-15% mains <25 mV dynamic: +/-25% load <100 mV
Noise and ripple:	< 15 mVpp, typical <10 mVpp (0÷20 MHz), 3 mVrms (0÷2 MHz)
RFI-rejection:	CE EN 50081-1, FCC (emission), EN 50082-1 or 2 (immunity)
Overvoltage protection:	trip off adjusted to 125% of nominal voltage each output
DC Off (trip off):	within 5 ms if +5%, -2,5% deviation from adjusted nominal values, after overload, overheat, over voltage, under voltage (bad status) and fan fail trip off voltages and currents adjustable, processor controlled
Internal temperature limits:	Cut off: 110 °C heat sink, 70 °C ambient, autom. maximum fan speed if air above VME modules >45°C
Operation:	0÷40°C without derating, rel. humidity 30÷80%, non condensing atmospheric pressure 70÷110 kPa, >85 kPa for 600 W continuous power, Storage: -30 °C up to 85 °C
Temperature coefficient:	< 0.2% / 10K
Stability:	10mV or 0,1% within 24 hours 50mV or 1,0% within 6 months
Efficiency:	ca. 80%
Cooling Airflow:	408 m³/h (at maximum fan speed)

2.2 Technical drawings

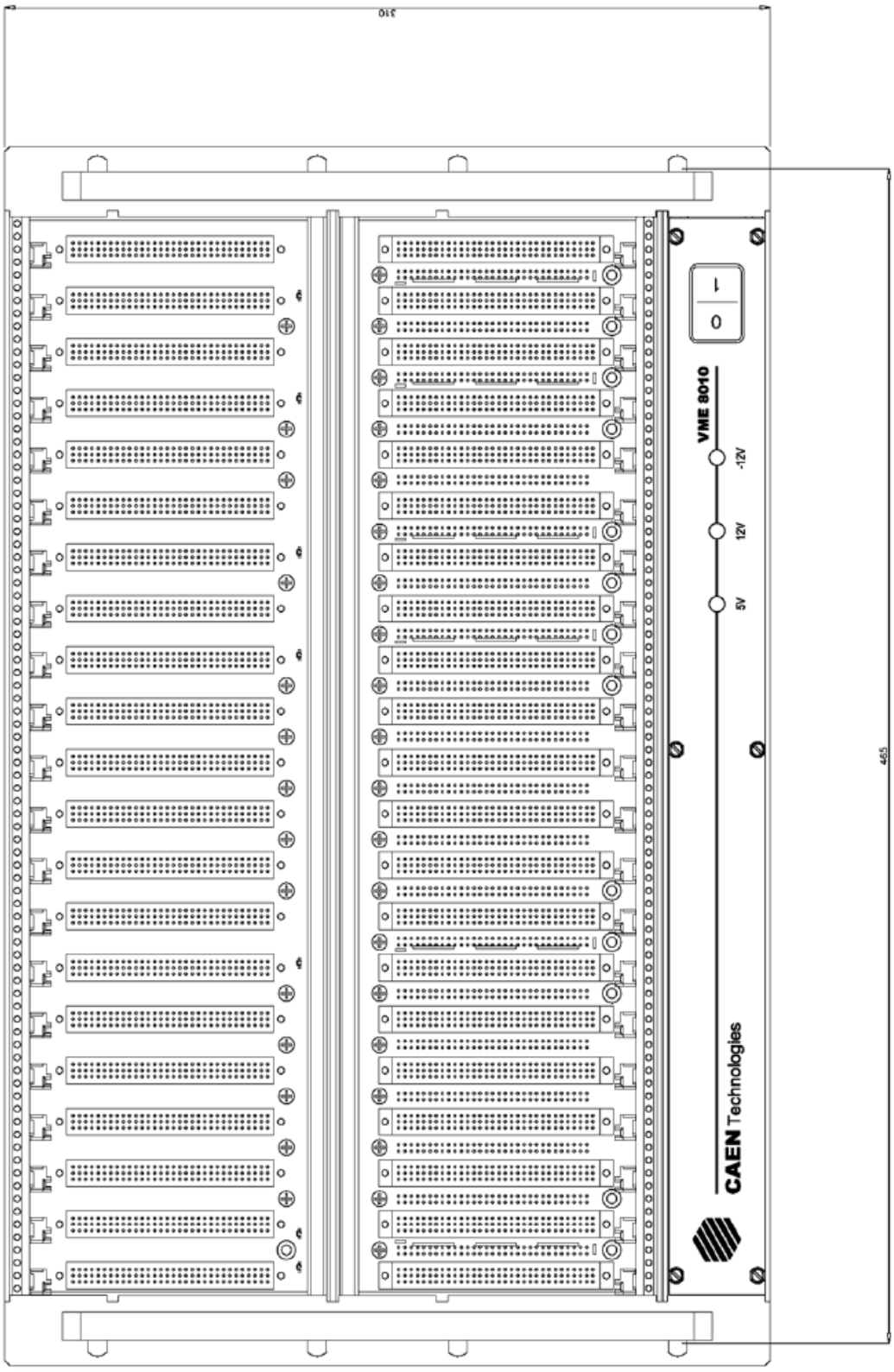

Fig. 2.1: Mod. VME8010 Front View

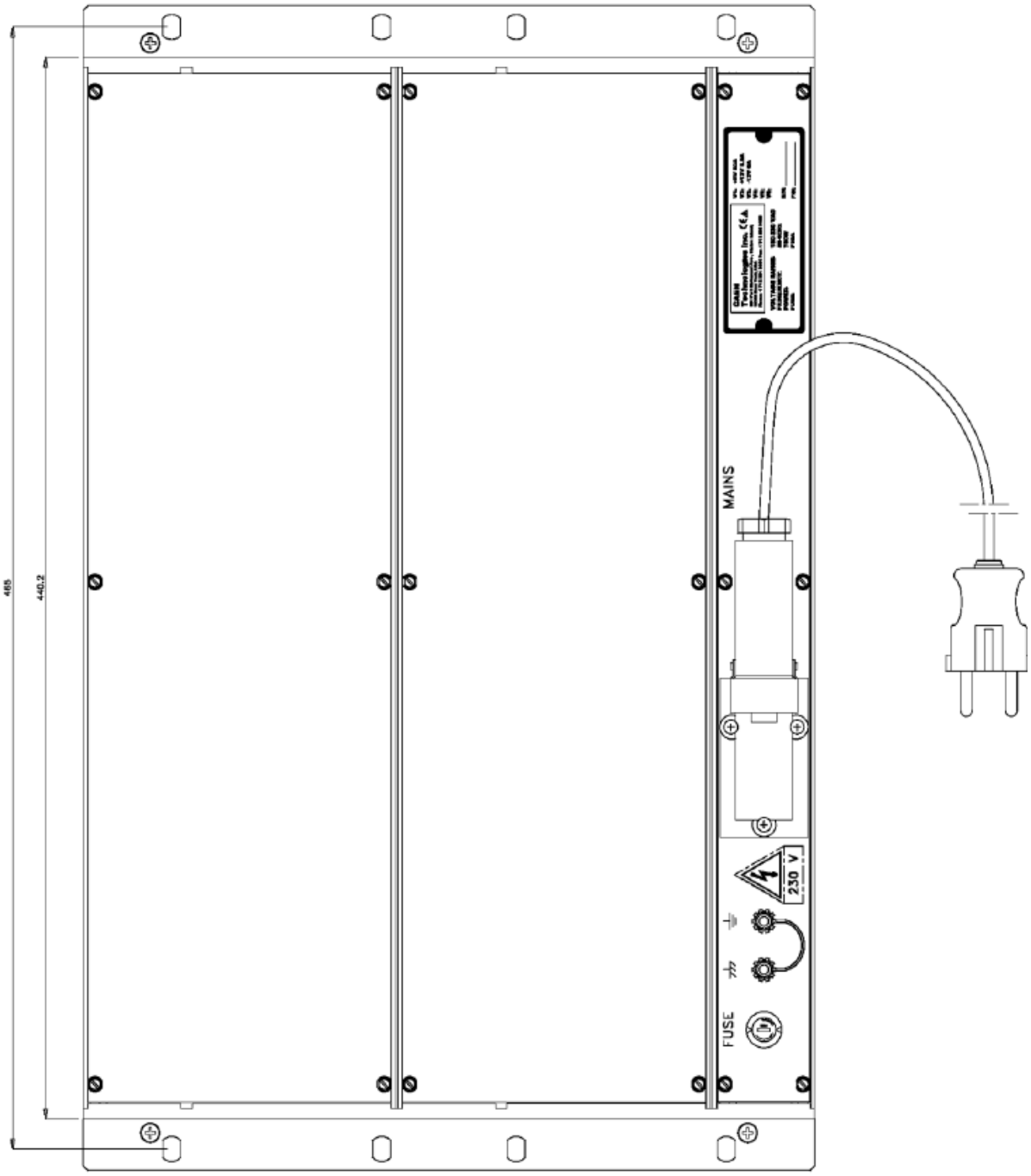

Fig. 2.2: Mod. VME8010 Rear View

2.3 Mains Voltage and Connection

The Power supplies are equipped with a “World”- mains input, which works properly form 94VAC up to 264VAC and within a frequency range of 47 to 63Hz. Before connecting to the mains please double-check correspondence.
Mains input connection at the power supply side is done with a 3-pin “Hirschmann” 16 A connector or power terminals.

Table 2.2: Hirschmann connector cabling

Hirschmann pin nr.	Signal	Description	Color of the Wire
Pin 1	L	Phase	black or brown
Pin 2	N	Return, Neutral	blue
Pin 3		not connected	
Earth	PE	Protective Earth	green/yellow

3. Backplane

3.1 Mechanical Design

The VMEbus is designed for 19-inch rack technology and supports bus lengths of up to 21 slots.
In this system, slot 1 is on the left of the rack, with the rest of the bus extending to the right. The daughterboards are connected to the bus board with 96-pin connectors to DIN 41612. Two configurations of the VMEbus are available for different applications.

3.1.1 J1-plane

The basic configuration is the 3U high (Single Eurocard) J1 plane. This plane provides all the address, data and control lines, and is fully capable of operating as a standalone bus.

3.1.2 J2-plane

For larger computer structures, the basic configuration can be extended with a second plane, the J2 plane, also 3U high. It lies directly below the J1 plane in the 19-inch rack and extends the data and address space of the computer system. In addition, the user is provided with 64 freely-definable inputs/outputs per slot, which can be connected using interconnection points on the rear of the backplane.
The J2 plane is only used as an extension of the VMEbus from the J1-plane and cannot be operated as a standalone bus.

3.1.3 J1/J2-Monolithic

Monolithic backplanes combine the J1 and J2 planes of the VMEbus on a single printed circuit board.
Preference should be given to these PCBs for new designs which access the J2 plane.
Because of its continuous power supply layer, the monolithic backplane is superior to two separate J1 and J2 planes, particularly with respect to dynamic current distribution.

3.1.4 Climatic Parameters

Operating temperature –40°C to +85°C
Storage temperature –55°C to +85°C
Climatic conditions according IEC 68/1: 25/085/21

3.1.5 Mechanical Parameters

Flammability
- PCB: UL 94 V-0
- Connectors: UL 94 V-0/–1

Vibration
- According to DIN 41640 Part 15: 10 Hz ÷ 500 Hz 5 g rms
- Impact (10 Impacts per axis x,y,z) 100 g, 6 ms

Connectors DIN 41612, C96 type, class 2 with 400 connection cycles

3.1.6 Electrical parameters

Compliant to VMEbus Specification ANSI/VITA 1-1994
Maximum data transfer rate 80 Mbyte/s for MBLTprotocol and 160 Mbyte/s for 2e-protocol
Ohmic resistance of signal lines < 60 mOhm/Slot

4. Power Supply section

4.1 Power Supply specifications

Table 4.1: Mod. VME8010 Power Supply Technical specifications

Input	
Voltage Range	85 ÷ 264 Vac Frequency 47 ÷ 63 Hz (440 Hz with reduced PFC - consult factory)
Inrush Current	<40 A at 25 °C and 264 Vac (cold start)
Fuse	16A / 250 Vac High Breaking Capacity, Fast Acting (not user accessible)
Power Factor	0.99 typical Leakage Current 1.5mA max @ 264 Vac & 63 Hz
Output	
Voltage / Current	See module tables
Turn on Delay	1.5 s max at 90 Vac & 100% rated output power
Rise Time	<10 ms to 90% of voltage, monotonic rise above 10%
Turn on Overshoot	<5% or 250 mV Load type dependant, no overshoot with resistive load
Efficiency	75% typical at 230 Vac & 100% rated power, configuration dependent
Hold up	16 ms min at 100 Vac & 100% rated output power
Rise Time	<10 ms to 90% of voltage, monotonic rise above 10%
Turn on Overshoot	<5% or 250 mV Load type dependant, no overshoot with resistive load
Efficiency	5% typical at 230 Vac & 100% rated power, configuration dependent
Hold up	16 ms min at 100 Vac & 100% rated output power
Ripple & Noise	<1% or 50% Pk- Pk, using EIAJ test method & 20 MHz bandwidth
Voltage Accuracy	<1% of set Voltage
Remote Sense	Yes Standard on single output modules, max 0.75 V total line drop Option for twin output modules
Minimum Load	No on any output
Temperature Coefficient	<0.02% of rated voltage per °C
Load Regulation	<0.5% or 25mV for 0-100% load change
Line Regulation	<0.1% for 100 - 264Vac input change
Cross Regulation	<0.2% for 100% load change on any other output
Transient Response Recovery	<6% or 300mV of set voltage for 50% load change (above 25% load) 500µs for recovery to 1% or 100mV of set voltage
Over Voltage Protection	120 - 130% of set voltage for outputs > 4.1V (Tracking OVP) 140 - 150% of set voltage for outputs < 4.1V (Tracking OVP) 120 - 150% of max rated output (Fixed OVP)
Over Current Protection	<150% of rated current, when output voltage <1%
Short Circuit Protection	<150% of rated current, when output voltage <1%
Over Temperature Protection	Yes Shuts down all outputs and fan. Cycle ac off / on to reset

Note *1 shutdown temp varies according to ambient, output power and input V*
2 ac fail signal (if fitted) provides 5ms warning of thermal shutdown

Table 4.2: Power supply safety approvals

SAFETY APPROVALS	Date	Amendments	Date	Amendments
EN 60950-1	2001	EN 61010-1	2001	
UL 60950-1	2003	IEC 61010-1*	2001	Second Edition
CSA22.2 No 60950-1	2003	IEC 60601-1	1988	A1: 1991, A2:1995
IEC60950-1*	2001	EN 60601-1a	1990	A1:1993, A2:1995, A13:1996
CE Mark	LV Directive 73/23/EEC (EN60950-1:2001)	UL 2601-1a	1997 Ed2	A2:1999
		IEC 61010-1:2001*	2001	Second Edition
* CB Certificate and report available on request		Check with technical Sales for status of approvals		

Table 4.3: Power supply isolation

Input to Output Reinforced 4.3 kV (dc)	Output to Earth Operational 200 V (dc)
Input to Earth Basic 2.3 kV (dc)	Output to Output Operational 200 V (dc)

Table 4.4: Power supply emissions

EMISSIONS BS EN61000-6-3:2001 (Residential, Commercial & Light Industrial Supply), also complies with BS EN61000-6-4:2001		
Radiated Electric Field	EN55022	Class B (as per CISPR.22) See application note for details
Conducted Emissions	EN55022	Class B (as per CISPR.22)
Conducted Harmonics	EN61000-3-2	Compliant to Class A
Flicker	EN61000-3-3	Compliant

Table 4.5: Power supply immunity

IMMUNITY BS EN61000-6-2:2001 (Industrial Environment), also complies with BS EN61000-6-1:2001 Criteria				
Electrostatic Discharge	EN61000-4-2	Level 4	Air discharge 15kv Contact discharge 8kV	A
Electromagnetic Field	EN61000-4-3	Level 3	(10V/m)	A
Fast / Burst Transient	EN61000-4-4	Level 4	4kV, (tested to 4.4kV)	A
Surge Immunity	EN61000-4-5	Level 3	Line to Line 2.2kV Line to Earth 1.1kV	A
Conducted RF Immunity	EN61000-4-6	Level 3	(10V)	A
Power Frequency Magnetic Field	EN61000-4-8	Level 3	(10A/m)	A
Voltage Dips, Variation, Interruptions	EN61000-4-11	Pass		

Table 4.6: Power supply environment

Temperature	0° to 65° operational, -25° to 85°C storage (max 12 months)
Derating	50°C to 65°C derate each output by 2.5% per °C
Low Temperature Start-up	-20°C
Humidity	5-95% RH non condensing
Shock	±3 x 20G shocks in each plane, total 18 shocks 20G shock = 11ms (±0.5ms), half sine conforms to EN60068-2-27, EN60068-2-47, IEC68-2-27, IEC68-2-47, JIS C0041-1987 conforms to MIL-STD-810E/F, Method 514.4, Pro I, Cat 1, 9
Vibration	Single axis 10 - 500Hz at 2G (sweep and endurance at resonance) in all 3 planes Conforms to EN60068-2-6, IEC68-2-6 Conforms to MIL-STD-810E, Method 516.5, Pro I, IV, VI
Altitude	3,000 metres operational (15,000 metres non operational)
Pollution	Degree 2, Material group 3
IP Rating	IP 10

4.2 Power supply technical drawings

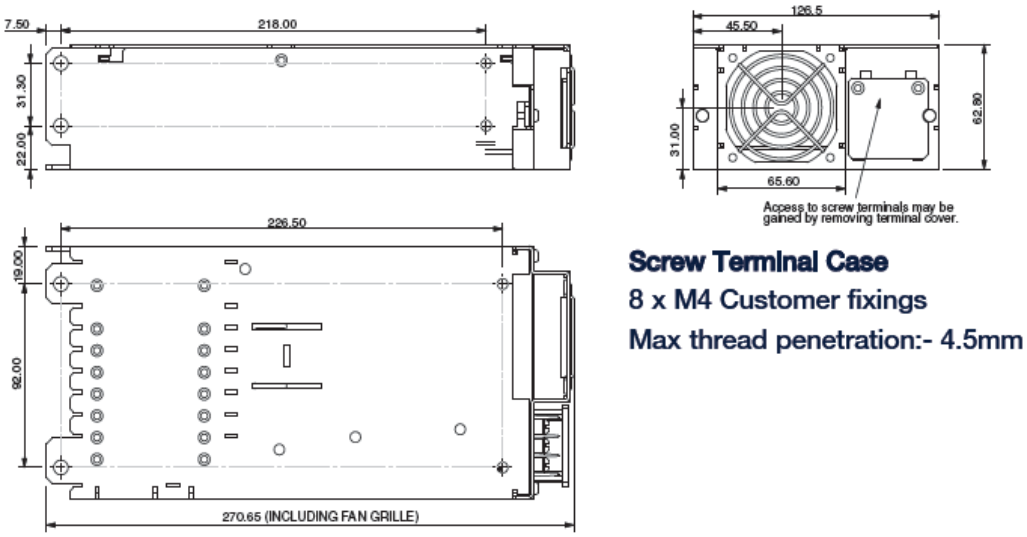

Fig. 4.1: Power supply mounting guide